CLAIMS

WHAT IS CLAIMED:

1.   A method for dynamically reconfiguring a computing system, the method comprising:

detecting a predetermined condition triggering a reconfiguration of the computing system; and

dynamically reconfiguring a signal path affected by the condition from a first mode to a second mode responsive to detecting the condition.

2.   The method of claim 1, wherein detecting the predetermined condition includes one of:

detecting a failure;

detecting an opportunity to repair a previously detected failure, and

detecting an opportunity to take a system domain affected by the condition off-line so that other system domains do not have to be reconfigured.

3.   The method of claim 2, wherein the computing system includes at least one system control board and wherein detecting the failure includes detecting the failure from the system control board.

4.   The method of claim 1, wherein the computing system includes a plurality of system domains and detecting the predetermined condition includes detecting the predetermined condition from one of the system domains.

5.   The method of claim 4, wherein the computing system includes at least one system control board and the method further comprises notifying the system control board of the error from an affected system domain.

6.   The method of claim 2, wherein detecting the failure includes detecting the failure during normal operations.

7.   The method of claim 1, wherein dynamically reconfiguring the signal path includes:

configuring an I/O switch defining a first end of the affected signal path from the first to the second mode; and

5   configuring a crossbar switch electrically defining a second end of the affected signal

6   path from the first mode to the second mode.

1   8.   The method of claim 1, further comprising defining a plurality of system

2   domains between which the affected signal path runs.

1   9.   The method of claim 8, wherein configuring the affected system domains

2   includes:

3   configuring a first switch in a first affected domain defining a first end of the affected

4   signal path from the first to the second mode; and

5   configuring a crossbar switch defining a second end of the affected signal path from

6   the first mode to the second mode.

1   10.   The method of claim 8, wherein the computing system includes a system

2   control board and configuring the affected system domains includes configuring the system

3   domains from the system control board.

1   11.   The method of claim 1, further comprising:

2   operating the affected signal path in the first mode prior to reconfiguration; and

3   operating the affected signal path in the second mode subsequent to the

4   reconfiguration.

1   12.   The method of claim 11, wherein:

2   operating the affected signal path in the first mode includes separating a plurality of

3   information in a transaction into two messages and transmitting the two

4   messages in parallel, each on a respective half of the affected signal path; and

5   operating the affected signal path in the second mode includes transmitting the two

6   messages in series on a single half of the affected signal path.

1   13.   The method of claim 1, wherein dynamically reconfiguring the signal path

2   includes:

3   disabling the affected signal path;

4   reconfiguring the hardware elements of the disabled signal path from the first mode to

5   the second mode; and

6   re-enabling the signal path.

14.   The method of claim 13, wherein reconfiguring the hardware elements of the signal path includes:

configuring a first switch defining a first end of the affected signal path from the first to the second mode;

configuring a crossbar switch defining a second end of the affected signal path from the first mode to the second mode.

15.   The method of claim 1, wherein dynamically reconfiguring the affected signal path includes dynamically reconfiguring the affected signal path from a normal mode to a degraded mode.

16.   The method of claim 1, wherein dynamically reconfiguring the affected signal path includes dynamically reconfiguring the afected signal path from a degraded mode to a normal mode.

17.   A computing system, comprising:

a plurality of I/O switches;

a crossbar switch;

a plurality of signal paths, each signal path being defined by one of the I/O switches and the crossbar switch; and

a system controller capable of detecting a condition triggering a reconfiguration and dynamically reconfiguring at least one of the signal paths affected by the condition from a first mode to a second mode.

18.   The computing system of claim 17, wherein the system controller is capable of detecting one of:

detecting a failure;

detecting an opportunity to repair a previously detected failure, and

detecting an opportunity to take a system domain affected by the condition off-line so that other system domains do not have to be reconfigured.

19.   The computing system of claim 18, wherein the computing system includes at least one system control board.

1   20.   The computing system of claim 18, wherein detecting the failure includes

2   detecting the failure during normal operations.

1   21.   The computing system of claim 17, wherein dynamically reconfiguring the

2   signal path includes:

3   configuring the I/O switch from the first to the second mode;

4   configuring the crossbar switch from the first mode to the second mode.

1   22.   The computing system of claim 17, further comprising a plurality of system

2   domains between which the affected signal path runs.

1   23.   The computing system of claim B70, wherein:

2   the first mode includes separating a plurality of information in each transaction into

3   two messages and transmitting the two messages in parallel; and

4   the second mode includes transmitting the two messages in series on a single half of

5   the signal path.

1   24.   The computing system of claim 17, wherein dynamically reconfiguring the

2   signal path includes:

3   disabling the affected signal path;

4   reconfiguring the hardware elements of the disabled signal path from the first mode to

5   the second mode;

6   re-enabling the signal path; and

7   repeating the previous three steps if a deadlock occurs.

1   25.   The computing system of claim 24, wherein reconfiguring the hardware

2   elements of the signal path includes:

3   configuring a first switch defining a first end of the signal path from the first to the

4   second mode; and

5   configuring a crossbar switch defining a second end of the signal path from the first

6   mode to the second mode.

1   26.   The computing system of claim 17, wherein dynamically reconfiguring a

2   signal path affected by the condition from a first mode to a second mode includes

3 dynamically reconfiguring the signal path affected condition from a normal mode to a

4 degraded mode.

1   27.   The computing system of claim 17, wherein dynamically reconfiguring a

2 signal path affected by the condition from a first mode to a second mode includes

3 dynamically reconfiguring the signal path affected condition from a degraded mode to a

4 normal mode.